IN THE CLAIMS

The following is a complete listing of claims and replaces all prior versions and listings of claims in the present application:

1. - 6. (Canceled)

7. (Currently Amended) A method of interpolating image data comprising a first mapping of discrete sample values, said method comprising the steps of:

(i) calculating edge information for each of ~~said~~ the discrete sample values of ~~said~~ the image data to identify edge sample values and storing an angle of orientation and an edge strength value for each of ~~said~~ the edge sample values;

(ii) manipulating ~~said~~ the edge sample values and ~~said~~ the stored angle of orientation for each of ~~said~~ the discrete sample values using a morphological process;

(iii) combining ~~said~~ the manipulated edge sample values and ~~said~~ the manipulated angle of orientation for each of ~~said~~ the discrete sample values to form a second mapping of ~~said~~ the discrete sample values;

(iv) mapping ~~said manipulated edge sample values of~~ said second mapping, using a mapping function, to form a third mapping;

(v) for each discrete sample value of said third mapping:

(i) calculating parameters of a kernel, wherein ~~said~~ the parameters are dependant upon ~~said~~ the edge sample values

and ~~said~~ the angle of orientation of each of ~~said~~ the sample values of said third mapping;

(ii) calculating a plurality of kernel values ~~utilising said~~ utilizing the parameters and ~~said~~ the kernel; and

(vi) convolving ~~said~~ the plurality of kernel values with said first mapping of discrete sample values to form a fourth mapping of discrete sample values.

8. (Currently Amended) The method according to claim 7, wherein said steps (i) to (vi) are carried out on at least one of a plurality of portions of said first mapping of discrete sample values of ~~said~~ the image data.

9. (Original) The method according to claim 7, wherein said fourth mapping is at a different resolution to said first mapping.

10. (Currently Amended) The method according to claim 7, wherein ~~said~~ the image data is ~~colour~~ color image data.

11. (Currently Amended) The method according to claim 10, wherein said steps (i) to (vi) are carried out for each ~~colour~~ color plane of ~~said colour~~ the color image data.

12. (Currently Amended) The method according to claim 10 ~~7~~, wherein step (i) is carried out in a first ~~colour~~ color plane and step (v) is carried out in a plurality of ~~colour~~ color planes.

13. (Currently Amended) The method according to claim 7, wherein step (i) includes the further sub-steps of:

calculating an edge indicator value[[,]] C[[,]] as ~~said~~ the edge information; and

comparing ~~said~~ the edge indicator value with a plurality of threshold values, wherein ~~said labelling of each discrete sample~~ the edge strength value is based on ~~said~~ the comparisons.

14. (Currently Amended) The method according to claim 13, wherein ~~said~~ the edge indicator[[,]] C[[,]] is of the form:

$$C = \max\left(\left|Y_0 - Y_i\right|\right), i \in 1,..,8$$

and wherein i is an index of the 8 nearest ~~neighbour~~ neighbor discrete sample values of a ~~centre~~ center discrete sample value[[,]] Y_0.

15. (Currently Amended) The method according to claim ~~13~~ 7, comprising the further step of determining ~~said~~ the angle of orientation for each of ~~said~~ the edge sample values.

16. (Currently Amended) The method according to claim 7, wherein said morphological process is a cleaning operation ~~performed on said discrete sample values~~.

17. (Original) The method according to claim 16, wherein said cleaning operation is a morphological opening operation followed by a morphological closing operation.

18. (Currently Amended) The method according to claim 7, wherein said mapping function is a nearest ~~neighbour~~ neighbor mapping function.

19. (Currently Amended) The method according to claim 7, wherein ~~said~~ the kernel is a universal interpolation kernel[[,]] *h(s)*.

20. (Currently Amended) The method according to claim 19, wherein ~~said~~ the universal interpolation kernel is of the form:

$$h(s_x, s_y)_{0\le\theta\le\pi/2} = \frac{1}{\sqrt{2}}\{h(1-2\theta/\pi)s_x + (2\theta/\pi)s_y)_{c=0.5}\ h\left(((2\theta/\pi-1)s_y)w(\theta)\right)_{c=0}\}$$

$$h(s_x, s_y)_{\pi/2<0<\pi} = \frac{1}{\sqrt{2}}\{h(2\theta/\pi-1)s_x + (2\theta/\pi-2)s_y)_{c=0.5}\ h\left(((2\theta/\pi-2)s_x + (1-2\theta/\pi)s_y)w(\theta)\right)_{c=0}\}$$

wherein *h(s)* is defined as:

$$h(s) = \begin{cases} 1, 0 \le |s| \le d \\ (2-\frac{3}{2}b-c)\left|\frac{s-d}{1-2d}\right|^3 + (-3+2b+c)\left|\frac{s-d}{1-2d}\right|^2 + (1-\frac{1}{3}b), d < |s| \le 1-d \\ 0, 1-d < |s| \le 1+d \\ (-\frac{1}{6}b-c)\left|\frac{s-3d}{1-2d}\right|^3 + (b+5c)\left|\frac{s-3d}{1-2d}\right|^2 + (-2b-8c)\left|\frac{s-3d}{1-2d}\right| + (\frac{4}{3}b+4c), 1+d < |s| \le 2-d \\ 0, \textit{Otherwise} \end{cases}$$

and wherein $s = t / \Delta t$ *and* $0 \leq d < 0.5$.

21. (Currently Amended) The method according to claim 7, wherein ~~said~~ the kernel is a cubic interpolation kernel[[,]] *h(s)*.

22. (Currently Amended) The method according to claim 21, wherein ~~said~~ the cubic interpolation kernel, *h(s)*, is of the form:

$$h(s) = \begin{cases} (2 - \frac{3}{2}b - c)|s|^3 + (-3 + 2b + c|s|^2 + (1 - \frac{1}{3}b), |s| \leq 1 \\ (-\frac{1}{6}b - c)|s|^3 + (b + 5c)|s|^2 + (-2b - 8c)|s| + (\frac{4}{3}b + 4c), \ 1 < |s| \leq 2 \\ 0, \textit{Otherwise} \end{cases}$$

and wherein $b = 0$ *and* $c = 0.5$.

23. (Currently Amended) The method according to claim 7, wherein ~~said~~ the kernel is a linear interpolation kernel.

24. (Currently Amended) The method according to claim 7, wherein ~~said~~ the kernel is a universal linear interpolation kernel.

25. (Currently Amended) The method according to claim 7, wherein ~~said~~ the kernel is a quadratic interpolation kernel.

26. (Currently Amended) The method according to claim 7, wherein ~~said~~ the kernel is a weighted sinc interpolation kernel.

27. - 34. (Canceled)

35. (Currently Amended) An apparatus for interpolating image data comprising a first mapping of discrete sample values, said apparatus comprising:

first calculation means for calculating edge information for each of ~~said~~ the discrete sample values of ~~said~~ the image data to identify edge sample values and storing an angle of orientation and an edge strength value for each of ~~said~~ the edge sample values;

manipulation means for manipulating ~~said~~ the edge sample values and ~~said~~ the stored angle of orientation for each of ~~said~~ the discrete sample values using a morphological process;

combination means for combining ~~said~~ the manipulated edge sample values and ~~said~~ the manipulated angle of orientation for each of ~~said~~ the discrete sample values to form a second mapping of ~~said~~ the discrete sample values;

mapping means for mapping ~~said manipulated edge sample values of~~ said second mapping, using a mapping function, to form a third mapping;

second calculation means for calculating parameters of a kernel for each discrete sample value of said third mapping, wherein said parameters are dependant upon ~~said~~ the edge sample values and ~~said~~ the angle of orientation of each of ~~said~~ the

sample values of said third mapping, and for calculating a plurality of kernel values ~~utilising said~~ utilizing the parameters and ~~said~~ the kernel; and

convolution means for convolving ~~said~~ the plurality of kernel values with said first mapping of discrete sample values to form a fourth mapping of discrete sample values.

36. (Original) The apparatus according to claim 35, wherein said fourth mapping is at a different resolution to said first mapping.

37. (Currently Amended) The apparatus according to claim 35, wherein ~~said~~ the image data is ~~colour~~ color image data.

38. - 45. (Canceled)

46. (Currently Amended) A computer readable medium, having a program recorded thereon, where ~~the~~ said program is configured to make a computer execute a procedure to interpolate image data comprising a first mapping of discrete sample values, said program comprising:

code for calculating edge information for each of ~~said~~ the discrete sample values of ~~said~~ the image data to identify edge sample values and storing an angle of orientation and an edge strength value for each of ~~said~~ the edge sample values;

code for manipulating ~~said~~ the edge sample values and ~~said~~ the stored angle of orientation for each of ~~said~~ the discrete sample values using a morphological process;

code for combining ~~said~~ the manipulated edge sample values and ~~said~~ the manipulated angle of orientation for each of ~~said~~ the discrete sample values to form a second mapping of ~~said~~ the discrete sample values;

code for mapping ~~said manipulated edge sample values of~~ said second mapping, using a mapping function, to form a third mapping, wherein for each discrete sample value of said third mapping, said program comprises code for calculating parameters of a kernel, wherein ~~said~~ the parameters are dependant upon ~~said~~ the edge sample values and ~~said~~ the angle of orientation of each of ~~said~~ the sample values of said third mapping, and for calculating a plurality of kernel values ~~utilising said~~ utilizing the parameters and ~~said~~ the kernel; and

code for convolving ~~said~~ the plurality of kernel values with said first mapping of discrete sample values to form a fourth mapping of discrete sample values.

47. (Original) The computer readable medium according to claim 46, wherein said fourth mapping is at a different resolution to said first mapping.

48. (Currently Amended) The computer readable medium according to claim 46, wherein ~~said~~ the image data is ~~colour~~ color image data.

49. (Currently Amended) The computer readable medium according to claim 46, further comprising:

code for calculating an edge indicator value[[,]] C[[,]] as ~~said~~ the edge information; and

code for comparing ~~said~~ the edge indicator value with a plurality of threshold values, wherein said ~~labelling of each discrete sample~~ edge strength value is based on ~~said~~ the comparisons.

50. (Currently Amended) The computer readable medium according to claim 49, wherein ~~said~~ the edge indicator[[,]] C[[,]] is of the form:

$$C = \max(|Y_0 - Y_i|), \quad i \in 1,..,8$$

and wherein i is an index of the 8 nearest ~~neighbour~~ neighbor discrete sample values of a ~~centre~~ center discrete sample value[[,]] Y_0.

51. (Currently Amended) The computer readable medium according to claim ~~49~~ 46, further comprising code for determining ~~said~~ the angle of orientation for each of ~~said~~ the edge sample values.

52. (Currently Amended) The computer readable medium according to claim 46, wherein said morphological process is a cleaning operation ~~performed on said discrete sample values~~.

53. (Original) The computer readable medium according to claim 52, wherein said cleaning operation is a morphological opening operation followed by a morphological closing operation.

54. (Currently Amended) The computer readable medium according to claim 46, wherein said mapping function is a nearest ~~neighbour~~ neighbor mapping function.

55. (Currently Amended) The computer readable medium according to claim 46, wherein ~~said~~ the kernel is a universal interpolation kernel[[,]] *h(s)*.

56. (Currently Amended) The computer readable medium according to claim ~~54~~ 55, wherein ~~said~~ the universal interpolation kernel is of the form:

$$h(s_x,s_y)_{0\le\theta\le\pi/2}=\frac{1}{\sqrt{2}}\{h(1-2\theta/\pi)s_x+(2\theta/\pi)s_y)_{c=0.5}\bullet h\Big(((2\theta/\pi)s_y+(2\theta/\pi-1)s_y)w(\theta)\Big)_{c=0}\}$$

$$h(s_x,s_y)_{\pi/2<\theta<\pi}=\frac{1}{\sqrt{2}}\{h(2\theta/\pi-1)s_x+(2\theta/\pi-2)s_y)_{c=0.5}\bullet h\Big(((2\theta/\pi-2)s_x+(1-2\theta/\pi)s_y)w(\theta)\Big)_{c=0}\}$$

wherein *h(s)* is defined as:

$$h(s)=\begin{cases}1,0\le|s|\le d\\(2-\frac{3}{2}b-c)\left|\frac{s-d}{1-2d}\right|^3+(-3+2b+c)\left|\frac{s-d}{1-2d}\right|^2+(1-\frac{1}{3}b),d<|s|\le 1-d\\0,1-d<|s|\le 1+d\\(-\frac{1}{6}b-c)\left|\frac{s-3d}{1-2d}\right|^3+(b+5c)\left|\frac{s-3d}{1-2d}\right|^2+(-2b-8c)\left|\frac{s-3d}{1-2d}\right|+(\frac{4}{3}b+4c),1+d<|s|\le 2-d\\0,Otherwise\end{cases}$$

and wherein $s = t / \Delta t$ *and* $0 \le d < 0.5$.

57. (Currently Amended) The computer readable medium according to claim 46, wherein ~~said~~ the kernel is a cubic interpolation kernel[[,]] *h(s)*.

58. (Currently Amended) The computer readable medium according to claim ~~56~~ 57, wherein ~~said~~ the cubic interpolation kernel[[,]] *h(s)*[[,]] is of the form:

$$h(s) = \begin{cases} (2 - \frac{3}{2}b - c)|s|^3 + (-3 + 2b + c|s|^2 + (1 - \frac{1}{3}b), |s| \le 1 \\ (-\frac{1}{6}b - c)|s|^3 + (b + 5c)|s|^2 + (-2b - 8c)|s| + (\frac{4}{3}b + 4c), \ 1 < |s| \le 2 \\ 0, Otherwise \end{cases}$$

and wherein $b = 0$ *and* $c = 0.5$.

59. (Currently Amended) The computer readable medium according to claim 46, wherein ~~said~~ the kernel is a linear interpolation kernel.

60. (Currently Amended) The computer readable medium according to claim 46, wherein ~~said~~ the kernel is a universal linear interpolation kernel.

61. (Currently Amended) The computer readable medium according to claim 46, wherein ~~said~~ the kernel is a quadratic interpolation kernel.

62. (Currently Amended) The computer readable medium according to claim 46, wherein ~~said~~ the kernel is a weighted sinc interpolation kernel.